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Uppsala, March 29, 1961

BvH/gc

Professor J. Lederberg
Stanford University Medical Center
Stanford, California
USA

Dear Professor Lederberg,

You may remember that you once gave me some advice on a project, in which I wanted to isolate tryptophanase-negative strains of E. coli. I was not able to isolate any mutants from the strains I got from Dr. Orskov a year ago, possibly because they required methionine, which may be a complication during the penicillin treatment, when tryptophan is the sole source of nitrogen. The project has since been neglected until I recently got a wild type Hfr strain from Dr. Bertani, who is in Stockholm this year. From this strain, I have got four clones which do not produce indole, but unfortunately, they do not seem to mate with F^+ strain W1 (TL^-, B^-, Lac^-F^-) to produce prototrophs on mineral--streptomycin agar as the original strain, K 40, does. I don't know whether this is due to a change in the virility or whether the mutants happened to arise from non-Hfr cells, but the mutants are still prototrophic and $Strep^S$. I shall now try to isolate a few more mutants and test them, but if you have any comments or advice to give, I should of course be glad to hear from you.

The immediate reason for writing, however, is some results that Drs. Albertsson and Baird and myself have obtained on the distribution of various strains of E. coli in aqueous polymer two-phase systems. In a dextran--polyethylene glycol-NaCl system, a pair of female and male strains of K12 (W1 and Hfr 58/161) show a difference in distribution between the two phases, and it is possible to obtain an almost complete separation of them by using a simple type Craig counter current apparatus. We have been using suspensions of cells grown in pennassay broth, which have been washed and suspended in a weak phosphate buffer, and after the distribution, samples from the phases have been plated on EMB-lactose agar. It appears that various K12 strains behave differently from other coli strains such as ML and H7, when the salt concentration in the phase system is increased, but this effect as well as the influence of conditions of growth and the age of the cells is now being further investigated. We have read your paper in PNAS on the effect of periodate on the virility of

the Hfr strains, and it should naturally be interesting if such a treatment has an effect on the phase distribution. We note in your paper that you have been using Hfr strains of differing virilities, and we wonder if it should not be worth while to see if these differ in behaviour in the phase systems. Our Hfr strains are probably rather inhomogeneous with respect to the male character, and this may explain some irregularities in our results. I must admit that our knowledge of the recent rapid advancement in E. coli genetics is rather incomplete, and we would therefore very much appreciate some advice on which strains we should use. We should also be grateful if you could possibly send us some suitable strains for these experiments.

Dr. Albertsson is going to the United States in June, and if it is possible for him to visit your laboratory then, he would very much appreciate this. He will write to you separately within a short time.

All the best regards,

Yours sincerely,

Bengt v. Hofsten